

Practices and Reflections on Innovation and Entrepreneurship Education in Universities from the Perspective of Industry-Academia Collaboration: Taking University A as an Example

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Abstract:

Innovation and entrepreneurship education in colleges and universities is not only a requirement for economic and social development but also a realistic demand for cultivating students' innovative spirit and creative ability. At present, innovation and entrepreneurship education in colleges and universities is facing many practical difficulties. By analyzing the connotation and significance of "industry-university integration," and combining it with the practice of innovation and entrepreneurship education in A University, this paper discusses the effective path of innovation and entrepreneurship education reform in colleges and universities from 5 aspects: establishing the system, setting up institutions, clear path, building team and excellent environment, to provide reference for the reform and innovation of innovation and entrepreneurship education in colleges and universities.

Keywords:

Industry-university integration
Innovation and entrepreneurship education
Talent cultivation

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1. Introduction

Entrepreneurship education focuses on fostering individuals with the courage to innovate and the ability to challenge the unknown. It emphasizes the spirit of exploration and innovation, which is crucial for students' comprehensive development. Innovation and entrepreneurship education are key to higher education

reform and personnel training quality improvement ^[1]. Despite some challenges in implementation, universities have made progress in this area ^[2,3]. Industry-university integration, involving close cooperation between educational institutions and industries, can enhance entrepreneurship education by sharing resources and leveraging strengths. This paper examines how industry-

university integration supports entrepreneurship education, using A University's practical case as an example.

2. Exploration of the practice of innovation and entrepreneurship education under the mode of industry-university integration in A University

2.1. Integrating innovation and entrepreneurship education into the undergraduate education training system

A University, a key provincial institution in Guangzhou, Guangdong Province, has developed a comprehensive talent development model emphasizing innovation and entrepreneurship. This model integrates classroom learning, industry collaboration, platform support, and regional features to foster students with a sense of patriotism, international perspective, and strong foundational skills. The university offers structured courses in professional education, innovation and entrepreneurship knowledge, and general education, complemented by an implicit curriculum focusing on entrepreneurial culture^[2]. Additionally, the university integrates entrepreneurship education into undergraduate programs and employs tutorial systems and school-enterprise partnerships to enrich teaching methods. At the same time, several compulsory or elective courses on popular innovation and entrepreneurship knowledge are offered (Table 1).

Venture capital and mentorship are offered to

support project growth and team development. Students interested in entrepreneurship are provided with classes, core courses, and cultural activities. Freshmen and sophomores engage in innovative practices, while juniors and seniors are assisted in starting businesses using the school's platform and a tiered funding system. This promotes creative thinking and independence. To improve practical skills, universities should increase collaboration with businesses and industries through internships, projects, and research partnerships. A mentoring system should be set up for entrepreneurs and experts to guide students.

2.2. Deep integration with industries to cultivate students' industrial thinking and innovation and entrepreneurship abilities

The school blends local elements and strategically attracts top talents from underdeveloped regions to foster innovation and entrepreneurship education. Distinguished figures like Hanno, Monet, and Zhang Guohao are engaged to guide students on industry trends, industrial thinking, advanced lectures, innovative courses, and corporate research initiatives. The school also emphasizes enhancing faculty-industry interaction, aiming to boost teachers' academic achievements and market value. Through collaborative recruitment with enterprises, joint innovation platform development, talent sharing, and creativity stimulation, the school has set up R&D centers on campus and extended educational platforms into companies, bridging the gap between theory and practice for student innovators to ensure practical experience

Table 1. Innovation and entrepreneurship knowledge courses

Course type	Course name	Course credits
Compulsory	Career Planning and Entrepreneurship Education for College Students	2.0
Compulsory	Social Practice	2.0
Elective	Career Design and Management	1.5
Elective	Marketing	1.5
Elective	Enterprise Management	1.5
Elective	Entrepreneurship Management	2.0
Elective	Entrepreneurship	1.5
Elective	investment science	1.5

for teachers, a system under the Guangdong Provincial Science and Technology Commissioner Project mandates mid-career teachers to spend at least half a year in enterprises every three years.

2.3. Integration of internal and external innovation and entrepreneurship training and practical resources

The collaborative innovation platform is planned and built to emphasize its educational role, focusing on scientific research and social service. The platform's management oversees its development, the school's teaching and research, and student training. It aims to gather international academic resources and talent, address key issues in industrial transformation, and cultivate innovative professionals. Throughout its construction, the platform transforms academic strengths into training advantages and integrates social services with education. It has attracted international design experts, served over 500 companies in 8 years, trained more than 1,000 students, and won prestigious design awards, enhancing student employment opportunities ^[3].

2.4. Strengthen cooperation in the Guangdong Hong Kong Macao Greater Bay Area, promote innovation and entrepreneurship training and incubation for college students

The Entrepreneurship Center at Hong Kong University of Science and Technology and Guangdong Yueke Financial Group aims to develop the innovation and entrepreneurship college as a platform for training and incubating university students from Guangdong and Hong Kong. The School of Innovation and Entrepreneurship has designed a comprehensive training model, curriculum, faculty, incubation platform, and investment mechanism, aiming to establish a talent cultivation nursery, an exchange platform, a demonstration base, and a research center for innovation and entrepreneurship. It has also collaborated with the Hong Kong University of Science and Technology to create an innovation and entrepreneurship base for students from both regions. The school places significant emphasis on the system to ensure the smooth advancement of innovation and entrepreneurship education, providing financial and position support, as well as incentives such as course

exemptions and credit recognition.

3. Effective path of innovation and entrepreneurship education in colleges and universities from the perspective of industry-university integration

Colleges and universities should focus on problem-oriented education, incorporate systematic thinking, and establish a comprehensive innovation and entrepreneurship ecosystem involving government, schools, industry, and businesses ^[4,5]. This ecosystem aims to integrate education with production, innovation, and entrepreneurship, to connect the education chain with talent, industry, and innovation chains.

3.1. Focus on improving innovation and entrepreneurship education policy system

Government leadership and policies significantly impact the development of innovation and entrepreneurship education in higher education. The state has introduced guidelines and plans to promote this education, addressing challenges in industry-education integration through systemic reforms. Key actions include establishing curriculum standards, a development fund, and promoting collaboration between universities and industry. A steering committee should be set up to direct innovation and entrepreneurship education, with industry organizations advising the government and enterprises recognizing the value of joint research with universities.

3.2. Set up specialized agencies to organize and implement innovation and entrepreneurship education

To enhance innovation and entrepreneurship education, various departments including personnel, employment, students, and Youth League committees should clarify responsibilities and increase resources ^[6]. Support should be provided to promote educational initiatives, build training bases, and offer policy and incubation services. Establish institutions like the Innovation and Entrepreneurship College or Center to oversee educational systems, implement decisions, improve regulations, and manage faculty development. Integrate industry and education, combine resources from teaching, research,

and experimentation, and collaborate with external entities like governments, businesses, and research institutes. Strengthen entrepreneurship courses, reform teaching, develop a curriculum system, build a mentor team, and support practical innovation and entrepreneurship activities, including the creation of spaces and bases, and guidance for student projects and competitions.

3.3. Building a curriculum system of deep integration of innovation and entrepreneurship education and professional education

The first aspect is to evaluate teaching quality based on innovative spirit, creativity, and entrepreneurial consciousness. The second aspect is the innovative curriculum system, which should be built on the cultivation of innovative and entrepreneurial talents, breaking down barriers between disciplines and specialties. It should include a curriculum system with characteristics of “general knowledge + professional module characteristics + interdisciplinary professional intersection.” This involves improving the general education curriculum, clarifying the characteristics of innovation and entrepreneurship discipline training, exploring the innovation and entrepreneurship teaching elements of professional courses, and carrying out interdisciplinary professional cross-teaching and research to form a new mechanism for training innovative and entrepreneurial talents across faculties, disciplines, and fields. It is also necessary to strengthen the ideological and political construction of the curriculum, improve the practicality of the curriculum, and focus on the assessment of the whole teaching process to comprehensively cultivate students’ innovative and entrepreneurial qualities.

3.4. Introduction and training to build high-quality teachers for innovation and entrepreneurship education

Develop training, assessment, and incentive mechanisms to cultivate high-level innovative and entrepreneurial talent among teachers. Implement an innovation introduction mechanism to recruit top scientific researchers, entrepreneurs, investors, and financial and

management experts as lecturers, tutors, and incubation instructors. The innovation training mechanism involves teacher curriculum training through on-campus, professional, and on-the-job methods to enhance the teaching of innovation and entrepreneurship skills, forming a core group for talent training within the school. Establish and improve evaluation standards for innovation and entrepreneurship education teachers, including an admission system, performance assessment, and an elimination mechanism. Create and refine the income distribution and performance evaluation systems for professional and technical positions, with specific evaluation methods and separate indicators, and increase rewards to boost teacher enthusiasm and initiative in innovation and entrepreneurship education.

3.5. Optimization of comprehensive guarantee conditions for innovation and entrepreneurship education

The campus should promote resource sharing by establishing simulation labs, innovation labs, and entrepreneurship training centers. Efforts should be made to create a high-quality innovation space and build practical platforms for student entrepreneurship. Cooperation with government, industry, and businesses should be strengthened to expand off-campus practical education bases, meeting students’ training needs. Additionally, cultural construction should be enhanced to improve the innovation and entrepreneurship environment. Despite a nationwide entrepreneurial boom, the university culture in this area is weak, with less than 3% of graduates starting businesses ^[7]. Universities should take steps like organizing forums, enhancing political education in entrepreneurship courses, establishing associations, and hosting festivals to enrich entrepreneurship education. Selecting and promoting successful examples, enriching publicity, and fostering a maker culture are essential to creating a campus atmosphere that encourages innovation and entrepreneurship.

Disclosure statement

The authors declare no conflict of interest.

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